so constructed as to give a minimum clearance of 2 inches around handle.

(4) *Manner of application.* Uncoupling levers shall be securely fastened with bolts or rivets.

(g) *Couplers.* Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.16 Steam locomotives used in switching service.

(a) *Footboards*—(1) *Number.* Two or more.

(2) *Dimensions.* (i) Minimum width of tread, 10 inches.

(ii) Minimum height of back stop, 4 inches above tread.

(iii) Height from top of rail to top of tread, not more than 12 nor less than 9 inches.

(iv) If made of wood, minimum thickness of tread shall be 1½, preferably 2 inches.

(v) Footboards may be made of material other than wood which provides the same as or a greater degree of safety than wood of 1½ inches thickness. When made of material other than wood, the tread surface shall be of antiskid design and constructed with sufficient open space to permit the elimination of snow and ice from the tread surface.

(3) *Location.* Ends or sides. If on ends, they shall extend not less than 18 inches outside of guage of straight track, and shall be not more than 12 inches shorter than buffer-beam at each end.

(4) *Manner of application.* (i) End footboards may be constructed in two sections, provided that practically all space on each side of coupler is filled; each section shall be not less than 3 feet in length.

(ii) Footboards shall be securely bolted to two 1- by 4-inch metal brackets, provided footboard is not cut or notched at any point.

(iii) If footboard is cut or notched or in two sections, not less than four 1- by 3-inch metal brackets shall be used, two located on each side of coupler. Each bracket shall be securely bolted to buffer-beam, end sill or tank frame by not less than two ⅞-inch bolts.

(iv) If side footboards are used, a substantial handhold or rail shall be applied not less than 30 inches nor more than 60 inches above tread or footboard.

(b) *Sill steps*—(1) *Number.* Two or more.

(2) *Dimensions.* (i) Lower tread of step shall be not less than 8 by 12 inches, metal. (May have wooden treads.)

(ii) If stirrup steps are used, clear length of tread shall be not less than 10, preferably 12, inches.

(3) *Location.* One or more on each side at gangway secured to locomotive or tender.

(4) *Manner of application.* Sill steps shall be securely fastened with bolts or rivets.

(c) *End handholds*—(1) *Number.* Two.

(2) *Dimensions.* Minimum diameter, 1 inch, wrought iron or steel. Minimum clearance, 4 inches, except at coupler casting or braces when minimum clearance shall be 2 inches.

(3) *Location.* One on pilot, buffer-beam; one on rear end of tender, extending across front end of locomotive and rear end of tender. Ends of handholds shall be not more than 6 inches from ends of buffer-beam or end sill, securely fastened at ends.

(4) *Manner of application.* End handholds shall be securely fastened with bolts or rivets.

(d) *Side handholds*—(1) *Number.* Four.

(2) *Dimensions.* Minimum diameter, seven-eighths of an inch, wrought iron or steel. Clear length equal to approximate height of tank. Minimum clearance, 2, preferably 2½ inches.

(3) *Location.* Vertical. One on each side of tender near front corner; one on each side of locomotive at gangway.

(4) *Manner of application.* Side handholds shall be securely fastened with bolts or rivets.

(e) *Uncoupling levers*—(1) *Number.* Two double levers, operative from either side.

(2) *Dimensions.* (i) Handles of front-end levers shall be not more than 12, preferably 9, inches from ends of buffer-beam, and shall be so constructed as to give a minimum clearance of 2 inches around handle.

(ii) Rear-end levers shall extend across end of tender with handles not more than 12, preferably 9, inches from side of tender, with a guard bent on handle to give not less than 2 inches clearance around handle.

(3) *Location.* One on rear end of tender and one on front end of locomotive.

(f) *Handrails and steps for headlights.* Switching locomotives with sloping tenders with manhole or headlight located on sloping portion of tender shall be equipped with secure steps and handrail or with platform and handrail leading to such manhole or headlight.

(g) *End-ladder clearance.* No part of locomotive or tender except draft rigging, coupler and attachments, safety chains, buffer block, footboard, brake pipe, signal pipe, steam-heat pipe or arms of uncoupling lever shall extend to within 14 inches of a vertical plane passing through the inside face of knuckle when closed with horn of coupler against buffer block or end sill.

(h) *Couplers.* Locomotives shall be equipped with automatic couplers at rear of tender and front of locomotive.

§ 231.17 Specifications common to all steam locomotives.

(a) *Hand brakes.* (1) Hand brakes will not be required on locomotives nor on tenders when attached to locomotives.

(2) If tenders are detached from locomotives and used in special service, they shall be equipped with efficient hand brakes.

(b) *Running boards*—(1) *Number.* Two.

(2) *Dimensions.* Not less than 10 inches wide. If of wood, not less than 1½ inches in thickness; if of metal, not less than three-sixteenths of an inch, properly supported.

(3) *Location.* One on each side of boiler extending from cab to front end near pilot-beam. (Running boards may be in sections. Flat-top steamchests may form section of running board.)

(4) *Manner of application.* (i) Running boards shall be securely fastened with bolts, rivets, or studs.

(ii) Locomotives having Wootten type boilers with cab located on top of boiler more than 12 inches forward from boiler head shall have suitable running boards running from cab to rear of locomotive, with handrailings not less than 20 nor more than 48 inches above outside edge of running boards, securely fastened with bolts, rivets, or studs.

(c) *Handrails*—(1) *Number.* Two or more.

(2) *Dimensions.* Not less than 1 inch in diameter, wrought iron or steel.

(3) *Location.* One on each side of boiler extending from near cab to near front end of boiler, and extending across front end of boiler, not less than 24 nor more than 66 inches above running board.

(4) *Manner of application.* Handrails shall be securely fastened to boiler.

(d) *Tenders of Vanderbilt type.* (1) Tenders known as the Vanderbilt type shall be equipped with running boards; one on each side of tender not less than 10 inches in width and one on top of tender not less than 48 inches in width, extending from coal space to rear of tender.

(2) There shall be a handrail on each side of top running board, extending from coal space to rear of tank, not less than 1 inch in diameter and not less than 20 inches in height above running board from coal space to manhole.

(3) There shall be a handrail extending from coal space to within 12 inches of rear of tank, attached to each side of tank above side running board not less than 30 nor more than 66 inches above running board.

(4) There shall be one vertical end handhold on each side of Vanderbilt type of tender, located within 8 inches of rear of tank extending from within 8 inches of top of end sill to within 8 inches of side handrail. Post supporting rear end of side running board, if not more than 2 inches in diameter and properly located, may form section of handhold.

(5) An additional horizontal end handhold shall be applied on rear end of all Vanderbilt type of tenders which are not equipped with vestibules. Handhold to be located not less than 30 nor more than 66 inches above top of end sill. Clear length of handhold to be not less than 48 inches.

(6) Ladders shall be applied at forward ends of side running boards.

(e) *Handrails and steps for headlights.* (1) Locomotives having headlights which can not be safely and conveniently reached from pilot-beam or steam chests shall be equipped with secure handrails and steps suitable for the use of men in getting to and from such headlights.